CHAIRMAN OF THE JOINT CHIEFS OF STAFF INSTRUCTION

DECONFLICTING JTIDS/MIDS OPERATIONS

1. <u>Purpose</u>. This instruction implements policy ensuring use of the Joint Tactical Information Distribution System/Multifunctional Information Distribution System (JTIDS/MIDS) does not exceed pulse density (time slot duty factor (TSDF) limitations specified in National Telecommunications and Information Administration (NTIA)) restrictions and subsequent US Military Communications-Electronics Board guidance. This instruction provides the policy, definition, procedures, and organizational responsibilities to manage JTIDS/MIDS use through the control, monitoring, supervision, and management of pulse densities, referred to as pulse deconfliction.

2. <u>Cancellation</u>. CJCSI 6232.01, 10 May 1995, "Deconflicting JTIDS/ Link 16 Operations," is hereby superseded.

3. <u>Applicability</u>. This instruction applies to the Military Services, Joint Staff, combatant commands. and those activities and agencies reporting to the Chairman of the Joint Chiefs of Staff operating JTIDS/MIDS-equipped systems within 200 nautical miles of the United States and its possessions (US & P). This instruction also applies to any military unit from a foreign nation and/or coalition force operating with US forces and within 200 nautical miles of the coastal US & P.

4. <u>Policy</u>. JTIDS/MIDS must not cause harmful interference with navigational aids operating in the same frequency band (e.g., Identification Friend or Foe and Tactical Air Navigation (TACAN)/distance measuring equipment (DME)). JTIDS/MIDS operations must comply

with the frequency assignment granted for specific geographic/operational areas. JTIDS/MIDS operations shall be deconflicted:

a. Within these areas to ensure local pulse densities do not exceed assignment restrictions.

b.Where concurrent operations lay in adjacent or overlapping geographic areas, to ensure that composite pulse density restrictions are satisfied.

Individual units must deconflict operations to ensure compliance with frequency assignment restrictions. If local units cannot deconflict themselves, the first common commander will perform this function. When no common commander exists or where such coordination is unachievable, the Joint Staff JTIDS/MIDS Deconfliction Authority will determine what methodology to use to ensure compliance with frequency assignment restrictions. The ultimate authority for deconfliction of JTIDS/MIDS operations is the Joint Staff (J-6).

5. Definitions. See the Glossary.

6. Responsibilities. See Enclosure A.

7. Summary of Chances. Major revisions are (a) new organizational responsibilities, (b) increased specificity of deconfliction procedures and (c) updated restrictions with FAA relaxation's.

8. Releasability. This instruction is approved for public release; distribution is unlimited. DOD components, other Federal agencies, and the public may obtain copies of this instruction through the Internet from the CJCS Directives home page--http: //wwwdtic.mil/doctrine/jel/cjcsd.htm. Copies are also available through the Government Printing Office on the Joint Electronic Library CD-ROM.

9. <u>Effective Date</u>. This instruction is effective upon receipt.

For the Chairman of the Joint Chiefs of Staff:

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Vice Admiral, U.S. Navy
Director Joint Staff

Enclosures:
   A--Individual and Organizational Responsibilities
   B--Procedures
   C--Restrictions With FAA Relaxations
   GL--Glossary

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ENCLOSURE A

INDIVIDUAL AND ORGANIZATIONAL RESPONSIBILITIES

1. <u>The Joint Staff</u>. The Director for Command, Control, Communications, and Computer Systems (J-6), Joint Staff, is assigned primary responsibility for ensuring compliance with pulse deconfliction restrictions. The Joint Staff (J6) is also responsible for:

a. Specifying the final JTIDS/MIDS Deconfliction Authority for setting policy and for deconflicting joint or combined day-to-day JTIDS/MIDS operations when conflicts occurring at lower levels cannot be resolved.

b. Monitoring the execution of policy to ensure all pulse deconfliction restrictions are met by JTIDS/MIDS-equipped units.

c. Acting as liaison with other government agencies for the establishment and execution of policy regarding deconflicting JTIDS/MIDS operations, exercises, training, and tests.

2. <u>Combatant commands' Services, and Defense agencies</u> will:

a. Ensure JTIDS/MIDS-equipped units are aware of the pulse deconfliction restrictions.

b. Ensure JTIDS/MIDS-equipped units have the resources to comply with established policies for deconflicting operations at the lowest level possible.

c. Act as the final authority for deconflicting individual combatant command, Service, or Defense agency JTIDS/MIDS operations within their respective areas of responsibility.

d. Provide resources to support the JTIDS Network Design Library and JTIDS/MIDS Deconfliction Authority in the execution of this policy.

e. Assign JTIDS/MIDS deconfliction coordinators.

f. Assign JTIDS deconfliction server-user levels. If a JTIDS/MIDS equipped unit is not a server user, then that unit must be assigned to a

JTIDS deconfliction coordinator who is an authorized server user. All units will have server viewing privileges.

3. <u>JTIDS/MIDS Deconfliction Authority</u>. The JTIDS/MIDS Deconfliction Authority is the senior joint operational commander, at the lowest level of command, common to both units. Should there be no common commander (e.g., conflicts arising between an operational unit and a test unit), the Joint Staff (J-6) will act as the Deconfliction Authority. The JTIDS Network Design Library will provide technical advice and recommendations to any JTIDS/MIDS Deconfliction authority when requested.

4. <u>Service JTIDS/MIDS Deconfliction Coordinators</u>. Service-designated deconfliction coordinators schedule JTIDS/MIDS operations within a geographic area encompassing one or more frequency assignment authorization areas. This coordination function is similar to the Navy's Geographic Area Assignment Coordinator (GAAC). Coordinators are responsible for:

a. Ensuring awareness and understanding of the JTIDS/MIDS frequency assignments within their areas of responsibility, and ensuring all operations within the frequency assignment area are coordinated and satisfy pulse deconfliction restrictions.

b. Coordinating with other users to satisfy operational requirements for JTIDS/MIDS use in their geographic area.

c. Ensuring that entries are made into the JTIDS/MIDS deconfliction server for JTIDS/MIDS operations within their area of responsibility to facilitate overlapping and adjacent area coordination.

5. <u>Unit/Staff Communications Planners</u>. Planners of existing and future JTIDS/MIDS operations, exercises, training, and tests will:

a. Coordinate with the appropriate JTIDS/MIDS Deconfliction Coordinators to satisfy all frequency assignment authorization restrictions. JTIDS/MIDS Deconfliction is similar to, and may be done as part of the same process as, coordinating airspace (or Operational Areas).

b. Submit a frequency assignment request in accordance with existing frequency management directives if a JTIDS/MIDS frequency

assignment does not exist or cannot support the mission for the desired area of operation.

c. Ensure all participating JTIDS/MIDS forces are included in the coordination process and are briefed on specific frequency assignment restrictions.

6. JTIDS Network Design Library (JNDL). The JNDL is the repository for all JTIDS/MIDS networks. Additionally, the JNDL will:

a. Provide combatant commands, Services, and Defense agencies with a 24-hour point of contact to address all JTIDS/MIDS deconfliction requirements as well as technical, operational, and analytical support for pulse density deconfliction.

b. Provide CINCs and joint force commanders with a 24-hour point of contact for immediate JTIDS/MIDS network selection support and coordinate technical, operational, and analytical support with the appropriate Service JTIDS/MIDS network design facility to fulfill the operational requirement.

c. Receive, store, and catalog all combatant command, Service, and Defense agency JTIDS/MIDS networks.

d. Assist the Joint Staff in developing pulse density deconfliction policies and monitoring execution policies to ensure compliance with restrictions for JTIDS/MIDS operations, exercises, and tests.

e. Provide technical advice to the Joint Staff, J-6, in the accomplishment of its pulse deconfliction responsibilities as outlined in this instruction.

f. Operate, maintain, and administer the JTIDS deconfliction server and assist users in its operation.

7. Deconfliction Organization Relationships. See Figure 1 for a block diagram of the descriptions contained within this enclosure.
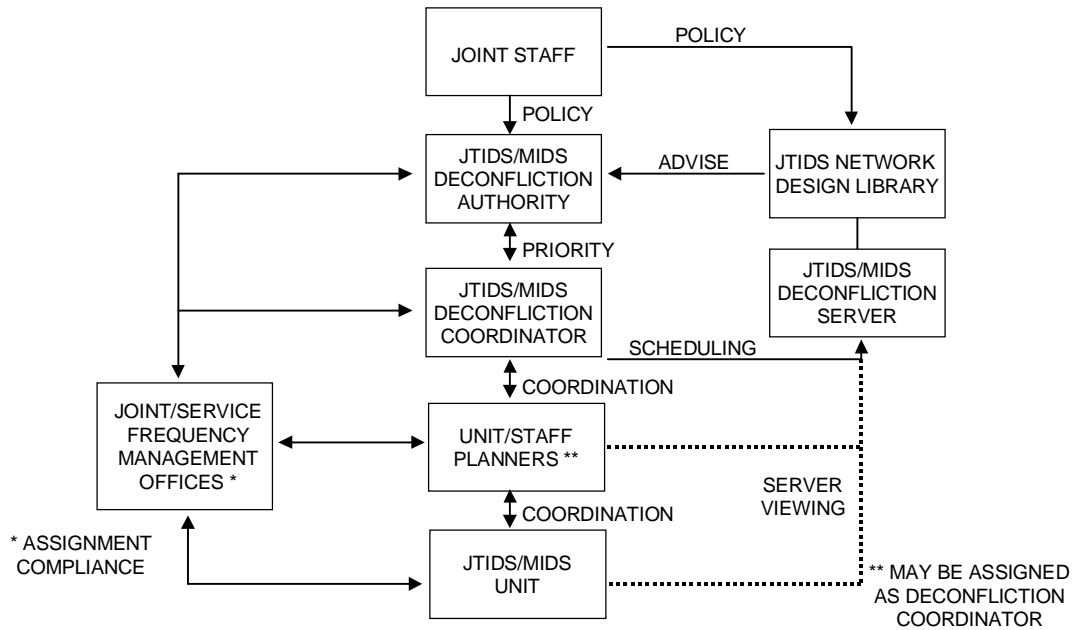
FIGURE 1 - DECONFLICTION ORGANIZATION RELATIONSHIPS

ENCLOSURE B

PROCEDURES

1. <u>General Approach</u>. Deconfliction of JTIDS/MIDS operations can best be achieved by keeping the majority of the day-to-day coordination at the lowest level possible. The future increase in JTIDS/MIDS-equipped units will correspond to an increase in geographic overlap for terminal operations. The JTIDS deconfliction server is an automated approach to support the coordination process.

   a. All JTIDS/MIDS activity will be coordinated through the JTIDS/MIDS deconfliction server. Server entry of planned usage will be done by the Service-designated coordinators. The deconfliction server allows for various "levels" of users. The Services will determine which user level their units will be assigned. Some units will operate under a Service-determined hierarchy of coordination, while other units will coordinate independently.

   b. For routine operations, the coordination/scheduling is handled by inputs of each unit's planned activity into the server. As training opportunities are identified, users can coordinate verbally or online to establish networks that adhere to the pulse density limitations for the intended operational areas.

   c. For complex exercises, tests, demonstrations, and special operations outside of routine operations, the communications planning offices of primary responsibility (OPRs) are also the OPRs for ensuring that pulse deconfliction restrictions and procedures are followed.

      (1) These OPRs will ensure that the planned event is properly coordinated with the Service-designated coordinator(s) and entered into the JTIDS/MIDS deconfliction server. Inputs will be done as part of the normal planning process of the exercise and should be accomplished at least as far in advance as is coordination of airspace (or Operational Area) use. Planners must incorporate the operational area's frequency assignment restrictions into their planned JTIDS/MIDS use.

      (2) If mission requirements exceed the pulse density limit, OPRs should request, through frequency management channels, a temporary JTIDS/MIDS frequency assignment that will accommodate the mission.

Failure to request a frequency assignment may result in delay or even cancellation of the JTIDS/MIDS usage.

   d. In the case of conflicting operations, deconfliction coordinators will deconflict their operations to ensure compliance with frequency assignments for the area. Any conflict between deconfliction coordinators not resolved at a local level will be elevated to the deconfliction authority.

2. <u>Coordination Procedures.</u> For the rest of these procedures, the term 'server user' will refer to the Service-designated coordinators who are authorized to input JTIDS/MIDS activity directly into the JTIDS/MIDS deconfliction server.

   a. Once the requirements for a JTIDS/MIDS exercise, demonstration, test, training, etc., have been determined, the existing frequency assignments must be reviewed to determine if they support the proposed use. The JTIDS/MIDS deconfliction server and the JNDL personnel can assist in determining pulse deconfliction requirements for the projected TSDF. If an existing frequency assignment is sufficient, the server will be used to schedule the operation. If a frequency assignment does not exist for the area of operations, or existing assignments are inadequate, a new request must be submitted (see Enclosure C for typical frequency assignment restrictions).

   b. Operations may either be scheduled as a single event, or each of the server users may make individual entries into the server. The server will alert the server user if the submitted TSDF exceeds the limits specified in the frequency assignment or if potential conflicts exist with other JTIDS/MIDS activity in overlapping/adjacent areas.

   c. There are many options available to server users when the mission requirements exceed pulse density restrictions within a specific geographic area. The JNDL or the appropriate Service network design facility can provide technical advice to reduce the pulse density. Actions that may be taken/recommended include, but are not limited to, the following:

      (1) Providing different operating times to units within a single geographic area.

(2) Establishing operational procedures to limit the use of network capacity to some or all units, so that the total pulse density in any given area complies with restrictions.

(3) Changing the geographic disposition of forces to reduce the pulse density in an area where JTIDS/MIDS use is particularly heavy.

d. Server users are responsible for ensuring that units assigned to them are informed of the restrictions contained within the appropriate frequency assignment. It is the responsibility of the JTIDS/MIDS units operating not to violate the frequency assignment restriction

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ENCLOSURE C

RESTRICTIONS WITH FAA RELAXATIONS

The restrictions listed below are typical of a temporary JTIDS/MID frequency assignment. They are provided as guidelines for requesting temporary JTIDS frequency assignments. Users should verify, through their respective frequency manager chain of command, what the actual restrictions are for their respective operations area. The restrictions contained in a specific frequency assignment for a particular area always take precedence. Operational requirements above these restrictions are possible, but must be submitted with sufficient justification and are handled on a case-by-case basis.

GEOGRAPHIC AREA

- No more than 100 percent TSDF within a 200 nautical mile (nm) radius circle drawn around each JTIDS/MIDS terminal
    - 100 percent TSDF is defined as 396,288 pulses per 12 second frame, regardless of number of pulses per time slot (not necessarily 100 percent of time slots)
    - TSDF is based on assigned time slots, regardless of whether transmission occurs

TSDF LIMITATIONS FOR INDIVIDUAL TERMINALS

- For prime control/relay aircraft operating above 18,000 feet
    - No more than 50 percent TSDF can be assigned to any individual terminal
    - Must be at least 3 nm from any other aircraft
- For all others
    - No more than 20 percent TSDF can be assigned to any individual terminal

MULTINET OPERATIONS

- Multinet operations are permitted, provided that geographic area restriction (100 percent TSDF in 200 rim circle) is not exceeded

MESSAGE STRUCTURES

- Use of all message structures (72, 258 and 444 pulses per time slot) is permitted, provided the geographic area restriction is not exceeded

ADJACENT TIME SLOTS

- Transmission in adjacent time slots is permitted

CONTENTION TRANSMISSIONS

- No contention transmissions are permitted, except for Round Trip Timing (RTT)
  - The FAA has reduced this restriction to permit the following: Initial Net Entry/Precise Participant Location and Identification (PPLI) and Fighter-to-Fighter messages

RESTRICTIONS NEAR DME/PRECISION (P) BEACONS

- No DME/P beacons are operational at this time. If DME/P beacons become operational
  - No JTIDS/MIDS transmissions will be allowed within radio line of sight (LOS) of operational DME/P beacons
    Note: LOS is approximately 225 rim for aircraft at 25,000 feet.

RESTRICTIONS NEAR MODE S SENSORS

- No JTIDS/MIDS operations allowed within radio line of sight of Mode S sensors
- The FAA has reduced this restriction to the following:
  - 5 rim for platforms with 1030/1090 MHz notch filters
  - 30 rim for fighter aircraft without 1030/1090 MHz notch filters
    Note: For platforms that do not fit either of the two profiles above, a relaxation is possible, but must be requested.

RESTRICTIONS NEAR TACAN/DME BEACONS

- No JTIDS/MIDS surface-based terminal permitted within approximately 0.5 nm of TACAN/DME beacons
  - Shorter distances could produce JTIDS/MIDS signal levels stronger than the permitted -33 dBm at the beacon receiver

- No more than 50 percent TSDF permitted within a 7 nm radius of TACAN/DME beacons

<u>RESTRICTIONS NEAR AIR TRAFFIC CONTROL RADAR BEACON SYSTEM (ATCRBS)/IDENTIFICATION, FRIEND OR FOE (IFF)</u>

- No surface based JTIDS/MIDS terminal transmissions are permitted within approximately 900 feet of ATCRBS/IFF interrogators
  - Shorter distances could produce JTIDS/MIDS signal levels stronger than -20 dBm at ATCRBS/IFF interrogators
- No restriction on airborne JTIDS/MIDS terminals

<u>OUTPUT POWER</u>

- JTIDS/MIDS terminals are limited to a maximum 200 WATTS +1 dB transmitter output power

<u>ELECTROMAGNETIC COMPATIBILITY (EMC) FEATURES</u>

- EMC features must be operational

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GLOSSARY

effective Time Slot Duty Factor (TSDF).* A calculation of time slot duty factor that allows for some time slots to contain 444 pulses, but the total number of pulses within a 12-second frame does not exceed 396,288. (For example, 256 time slots (an arbitrary number which is desired to have higher data throughput) times 444 pulses (higher data throughput) = 113664 pulses. This leaves 282,624 pulses divided by 258 pulses (standard data throughput) = 1095 time slots available for allocation at the 258 pulse per time slot rate. If all of the remaining time slots are now allocated we have a grand total of 1351 time slots (258 time slots @ 444 pulses and 1095 time slots ~ 258 pulses) and we have reached the 100 percent pulse limit of 396,288 for an equivalent TSDF of 100 percent.)

$$\text{TSDF (\%)} = \frac{\text{Total pulses in assigned Time Slots (TS)}}{\text{Total pulses allowed in a 12-second frame}} = \frac{(\text{Total TS w/258 pulses X 258} + \text{Total TS w/444 pulses X 444})}{396,288} \times 100$$

frequency assignment.* An approval from a recognized authority, based on specific situational descriptions, to transmit on specified radio frequencies.

frequency clearance.* An authorization given by the responsible authority for the use of frequencies for a radio frequency (RF) system to operate and provide a specified class of service (i.e., temporary assignments, jamming exercises).

Joint Tactical Information Distribution System/Multifunctional Information Distribution System (JTIDS/MIDS).* JTIDS and MIDS are high capacity, anti-jam, secure, digital information transfer systems operating in the UHF band on 51 discrete frequencies between 969 MHz and 1206 MHz. MIDS is a technology insertion program to reduce component size and weight while maintaining all JTIDS functionality. The United States, France, Italy, Germany, and Spain are currently participating in the MIDS program.

JTIDS/MIDS frequencies.* JTIDS operates in the 960 - 1215 MHz frequency band. JTIDS/MIDS operates on 51 frequencies within three sub-bands: 969 -1008 MHz, 1053 - 1065 MHz, and 1113 - 1206 MHz. Within these sub-bands, the JTIDS/MIDS frequencies occur at 3 MHz intervals. JTIDS/MIDS terminals are designed to exclude JTIDS/MIDS transmissions between 1008 MHz and 1053 MHz and between 1065 MHz

and 1113 MHz. In aircraft installations, the JTIDS/MIDS terminal may also provide the TACAN function; therefore, airborne JTIDS/MIDS terminals are capable of using the entire 962 - 1213 MHz range for TACAN functions, but restrict JTIDS/MIDS transmissions to the three sub-bands described above. The 960-1215 MHz band is used by civil and military aviation navigational systems. The Air Traffic Control Radio Beacon System (ATCRBS), Mode S systems, and Identification Friend or Foe (IFF) systems use 1030 MHz for interrogations and 1090 MHz for replies. Civil aviation distance measuring equipment (DME) and Military Tactical Air Navigation (TACAN) system operates on frequencies from 962 MHz to 1213 MHz in 1 MHz increments. Each DME/TACAN channel uses two frequencies, one for interrogations from the aircraft for information and one for beacon replies.

JTIDS/MIDS Network Management Process.* The process by which connectivity plans for JTIDS/MIDS operations are designed and coordinated and platform loads are developed and disseminated to all of the platforms participating in that plan.

pulse density. The total effective TSDF resulting from the transmissions of all the JTIDS/MIDS terminals within a single geographic area. A geographic area is defined as a circular area with a radius defined in the Interdepartmental Radio Advisory Committee (IRAC) Spectrum Certification (currently 200 nary), around each JTIDS terminal within which the TSDF is counted.

Time Slot Duty Factor (TSDF1.* A percentage that is based on the sum total of pulses contained in assigned time slots, with each time slot containing 258 pulses, relative to the maximum number of pulses allowed in a 12-second JTIDS/MIDS frame. (For example, 1536 time slots (12-second frame) x 258 pulses (per time slot) = 396,288 pulses per 12 second frame. This equates to 100 percent of the pulses allowed in a 12-second frame, the current restriction/limitation.) TSDF is represented by two numbers (e.g. 100/50). The first number is the maximum TSDF permitted in a given geographic area or by the network design. The second number is the maximum allowed for any single platform.

$$\text{TSDF (\%)} \quad \frac{\text{Total pulses in assigned Time Slots (TS)}}{\text{Total pulses allowed in a 12-second frame}} = \frac{(258 \text{ X TS assigned) X } 100}{396{,}288}$$